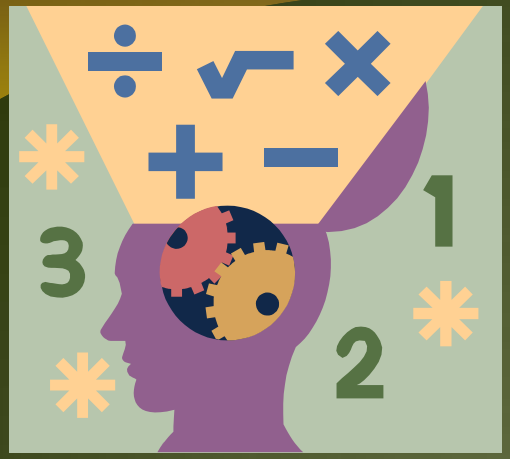


The Right Moves:

Evaluating our Math Curriculum from Intervention to Core

Elaine Layman, Linda Textoris, and Susan Ward
John W. Tolbert, Jr. Elementary
Leesburg, VA

Who Are We?

- Elaine Layman, Principal, John W. Tolbert, Jr. Elementary
- Linda Textoris, Administrative Intern
- Susan Ward, Administrative Intern
- John W. Tolbert, Jr. Elementary was one of the first fifteen schools chosen by the state in 2007 to pilot Response to Intervention

Our Approach to RtI Implementation

- Parallel implementation timelines
- Developed three year plan
  - Year I - Reading Tiers I and II
  - Year II – Reading Tiers I, II, and III; Math Tiers I and II
  - Year III – Full implementation Reading and Math

Parallel Maps

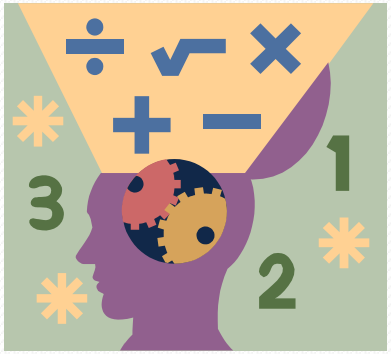
Leadership Team

- July /August – Develop staff presentations, develop intervention binder
- September – Develop intervention binder
- October – Leadership team pilot interventions and provide feedback to committee
- November – Introduce interventions to teachers; Pilot screening tools
- December – Provide feedback on screening tools
- January – Introduce screening to staff
- Etc.

Whole Staff

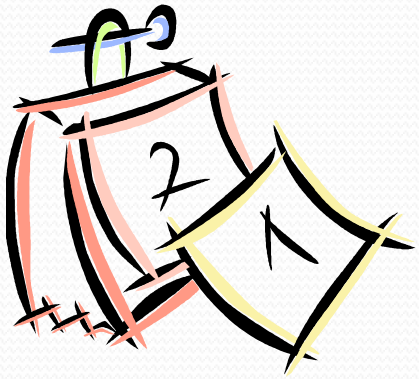
- August – Overview of RtI components to staff
- September – Implement Power Up activities without intervention
- October – Complete Universal Screening (DRA and PALS) and form intervention groups
- November – Provide staff development to grade level teacher on interventions
- December – Begin intervention
- January – Universal screening using new measures; Begin Data Collection
- Etc.

Year 1 Evaluation



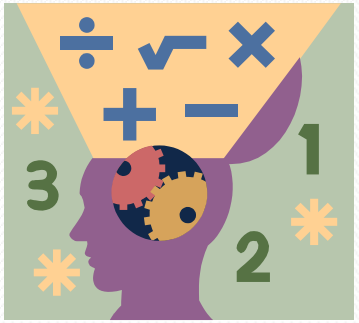
- Wait on Math Implementation
- Move forward with Reading Tier III
- Redo Master Schedule to allow for common planning and data meetings

Year 2



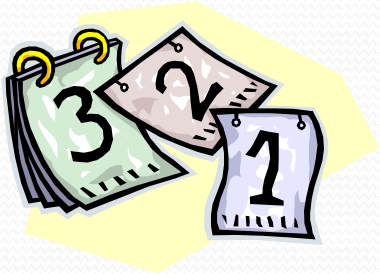
- Added Tier III Reading Interventions
- Revised master schedule
- Added Aimsweb as universal screener
- Added additional interventions

Year 2 Evaluation



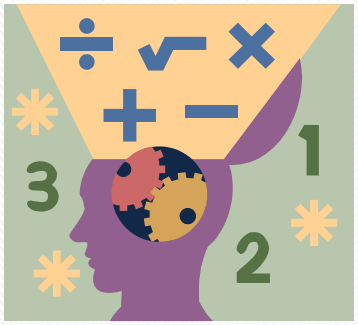
- Revised Plan for Year 3 and added Year 4
- Pilot Math Fluency Year 3; Fully Implement Year 4
- Identify Math Skills for intervention
- Continue Reading Tiers I, II and III

Year 3



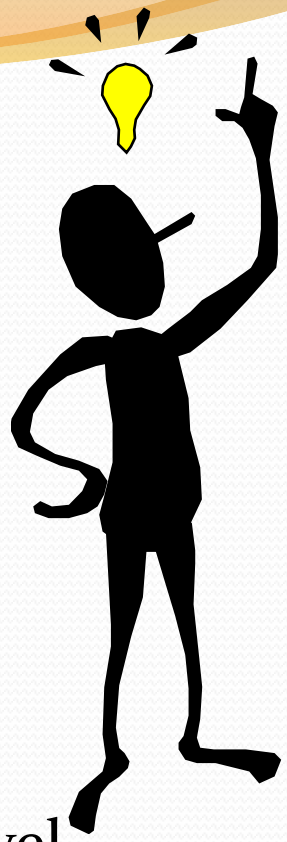
- Successfully continued RtI for reading
- Developed additional interventions
- Streamlined universal screening
- Piloted Rocket Math for math fluency
- Studied Aimsweb MCOMP and MCAP to gather ideas for a continuum of skills

Year 3 Evaluation



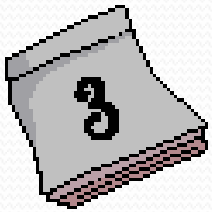
- There are many skills in math.
- These skills spiral and are difficult to break down into ongoing intervention skills.
- Math skills are better addressed where they occur in the curriculum.

We need a core program!



- Differentiation
- Common Language among staff members
- Planning tools
- Identification of Students
- Screening Tools
- Variety of math experiences: literature, higher level thinking skills, reading math, writing about math, manipulatives, applications and more!

Year 4



- Revised plan to include development of a Math Framework to define our core program

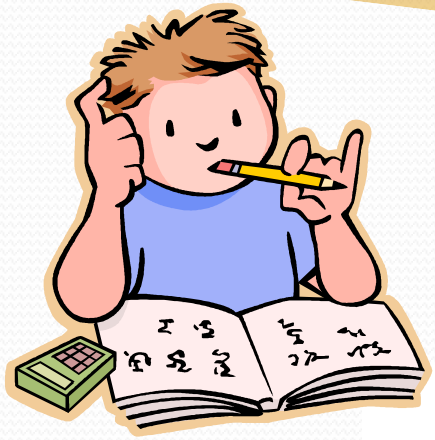
Math Framework

Problem of the Day	Guided Math	Student Workshop	Wrap-up
Three problems that pre-assess and identify students for differentiated lessons.	Leveled, teacher directed lessons that are pre-planned to allow for review, remediation and extension.	Centers: •Fluency activities •Manipulative representations •Game applications •Technology integration •Independent skill practice	Higher level, open ended questions that allow students to demonstrate verbally and in writing their abilities to apply and extend their learning.

Problem of the Day

- Problem 1 – Review of previous lesson
- Problem 2 – Spiraling skill (Blast from the Past)
- Problem 3 – Pre-assess skill for the day's lesson

Wrap-up



Opportunity to extend, discuss, and write about math.

Provides assessment of student's ability to extend their learning. (See Wrap-up Rubric)

Math Framework
Wrap–Up Rubric

Domain	Expert (Exceeds) 4	Practitioner (Meets) 3	Apprentice (Progressing) 2	Novice (Below) 1
Conceptual Understanding	Mathematical representations helped clarify the problem's meaning. Inferred or hidden information was used. Procedures used would lead to a concise and efficient solution.	Mathematical representation was appropriate. All the relevant information was used. Procedures used would lead to a correct solution.	Mathematical representation was inefficient or inaccurate. Some, but not all, of the relevant information was used. Procedures used would lead to a partially correct solution.	Mathematical representations of the problem were incorrect. The wrong information was used. Procedures used would not solve the problem.
Reasoning	Innovative, creative strategies were used to solve the problem. The solution was proved correct. Examples and counterexamples were given to support the logic of the solution.	Appropriate strategies were used to solve the problem. Each step was justified. Logic of the solution was obvious.	Oversimplified strategies were used to solve the problem. Little reasoning was offered that justified the work. Leaps in logic were hard to follow.	Strategies used were not appropriate. Reasoning did not support the work. Logic was not apparent.
Computation and Execution	All aspects of the solution were accurate. Multiple representations verified the solution. Multiple ways to compute the answer were shown.	Computation was accurate. Representations were complete and accurate. Work clearly supported the solution.	Minor computational errors were made. Representations were mostly correct, but not accurately labeled. Evidence for solutions was inconsistent or unclear.	Serious errors in computation led to an incorrect solution. Representatives were seriously flawed. No evidence was given of how the answer was computed.
Connections	A general rule or formula for solving related problems was created. Connection to other disciplines or real-life applications was accurate and realistic.	Important patterns and relationships were recognized. Connection was made to other disciplines or real-life applications.	Some patterns and relationships were recognized. A hint of connection to other disciplines or real-life applications was evident.	Patterns and relationships were not recognized. No connection to other disciplines or real-life applications was evident.
Communication	Explanation was clear and concise. Mathematical vocabulary was used precisely.	Explanation was easy to follow. Mathematical vocabulary was used correctly.	Explanation was not clearly stated. Mathematical vocabulary was used imprecisely.	Little or no explanation for the work was given. Mathematical vocabulary was incorrect.

Student Workshop

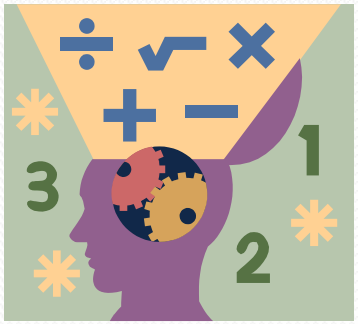
- Prescribed centers that change for each unit of study.
- Students work independently here while teacher works with a small group.

Guided Math

- Inspired by guided reading concept
- Text reference, *Guided Math*, Laney Sammons
- Three leveled lessons preplanned for
  - Remediation of foundational skills
  - Teaching of new skill
  - Extending and applying skill

Mid Year 4 Evaluation

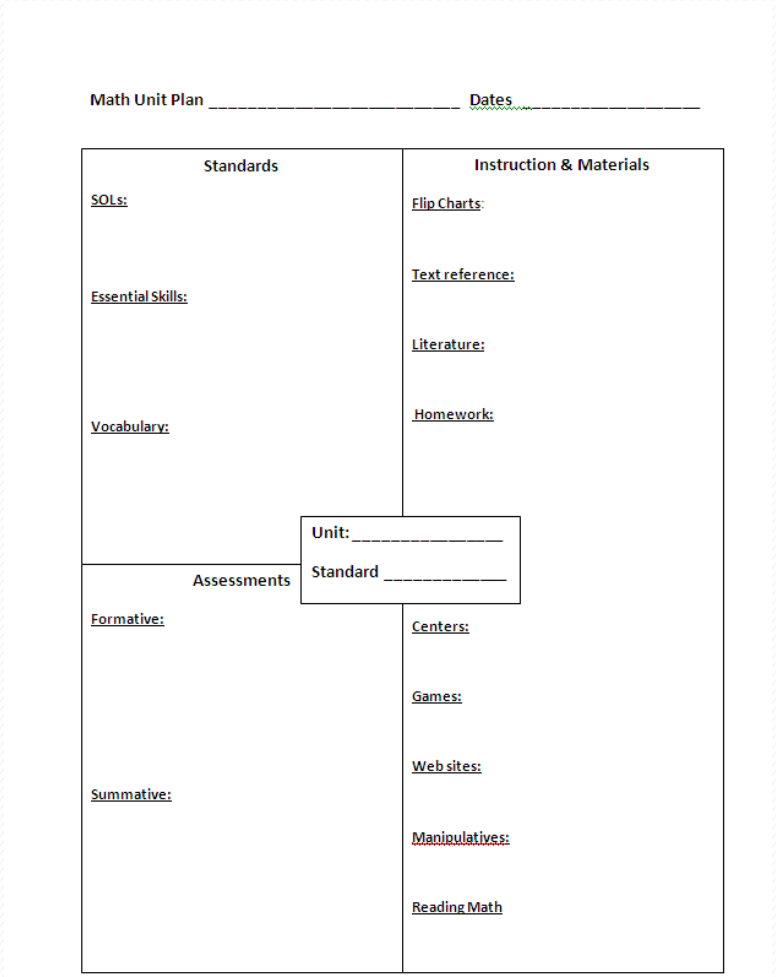
- Needed unit planning tool to develop common language and approach



Unit Planning Tool

Three Sections

- Standards
- Common Assessments
- Materials needed for direct instruction and independent center activities



Math Unit Plan _____ Dates _____

Standards	Instruction & Materials
SOLs: Essential Skills: Vocabulary:	Flip Charts: Text reference: Literature: Homework:
Unit: _____ Standard _____	
Assessments	
Formative: Summative:	Centers: Games: Web sites: Manipulatives: Reading Math

Lesson Planning Tool

- Purpose – Allow for pre-planned differentiation

- Five parts
  - Learning Target to post and share with students
  - Problem of the Day to plan as a team
  - Differentiated, teacher directed lessons
  - Blooms Taxonomy to serve as a reminder
  - Assessment

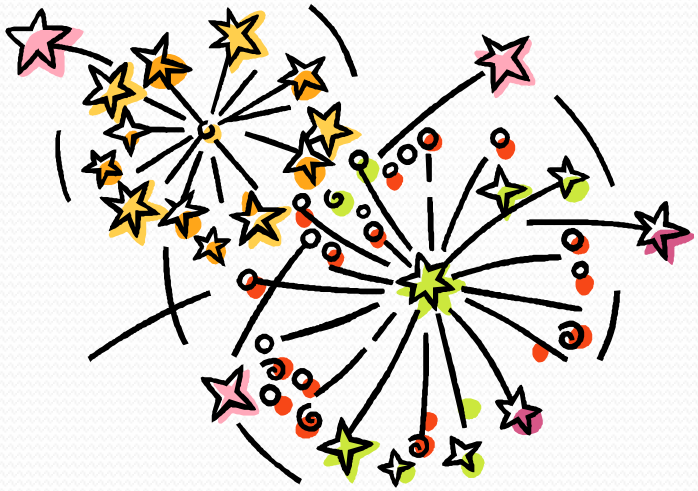
Lesson Plan

Learning Target _____

POD		Bloom's Taxonomy
1) 2) 3)		○ Creating ○ Evaluating ○ Analyzing ○ Applying ○ Understanding ○ Remembering
Below Target	On - Target Lesson	Exceeds Target
Materials	Materials	Materials
Assessment		

Year 5 (current year)

- Full implementation of the complete math framework:
  - Unit Planning Tool
  - Lesson Planning Tool
  - Problem of the Day
  - Guided Math
  - Wrap-Up



We are looking at Math differently.

- Tier I – Core program and EXTENSION
- Tier II – Reteach and Remediate
- Tier III – Review of foundational skills

Questions?

elaine.layman@lcps.org; susan.ward@lcps.org;
linda.textoris@lcps.org